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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,587	02/25/2002	Edward J. Gavin	016866-008200US	6008

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EXAMINER	
LAU, TUNG S	

ART UNIT	PAPER NUMBER
2863	

MAIL DATE	DELIVERY MODE
06/13/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/084,587	GAVIN ET AL.	
	Examiner	Art Unit	
	TUNG S. LAU	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/20/2008 has been entered.

Double Patenting rejection

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).
A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).
Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-34 and 39-40 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-100 of U.S. Patent No. 6,675,104 (copending application 09999081) in view of B.K. Alsberg (Classification of Pyrolysis mass spectra by fuzzy multivariate rule induction-

comparison with regression, K-nearest neighbour, neural and decision-tree methods, 1997 Elsevier Science B.V.).

Patent 10/084,587 and B.K. Alsberg describe the invention as shown below with the difference underline in the claims.

Claim 1 (10/084,587)	Claim 1, 2 (U.S. Patent 6,675,104)
1. A method that analyzes mass spectra using a digital computer, the method comprising:	1. A method that analyzes mass spectra using a digital computer, the method comprising:
a) entering into a digital computer a data set obtained from mass spectra from a plurality of samples, wherein each sample is, or is to be assigned to a class within a class set comprising two or more classes, each class characterized by a different biological status, and wherein each mass spectrum comprises data representing signal strength as a function of time-of-flight, mass-to-charge ratio, or a value derived from time-of-flight or mass-to-charge ratio, and is created using a laser desorption ionization process; and	a) entering into the digital computer a data set obtained from mass spectra from a plurality of samples, wherein each sample is, or is to be assigned to a class within a class set comprising two or more classes, each class characterized by a different biological status, and wherein each mass spectrum comprises data representing signal strength as a function of time-of-flight, mass-to-charge ratio, or a value derived from time-of-flight or mass-to-charge ratio; and
b) forming a classification model which discriminates between the classes in the class set, wherein forming comprises analyzing the data set by executing code that embodies a classification process; and	b) forming a classification model which discriminates between the classes in the class set, wherein forming comprises analyzing the data set by executing code that embodies a classification process comprising a recursive partitioning process, which is a classification and regression tree process.
c) interrogating the classification model to identify one or more features that differentiate the different biological	

status of each class from the biological status of other classes in the class set, wherein the one or more features include signal shapes, signal areas, signal widths, or the number of signals in each mass spectrum, or any combination thereof.	2. The method of claim 1 wherein the mass spectra are selected from the group consisting of MALDI spectra, surface enhanced laser desorption/ionization spectra, and electrospray ionization spectra.

B.K. Alsberg (Classification of Pyrolysis mass spectra by fuzzy multivariate rule induction-comparison with regression, K-nearest neighbour, neural and decision-tree methods, 1997 Elsevier Science B.V.)
c) interrogating the classification model to identify one or more features that differentiate the different biological status of each class from the biological status of other classes in the class set (page 390-392), wherein the one or more features include signal areas, signal widths, and the number of signals in each mass spectrum (page 392-393). in order to have a system able to solve problems with a rapid and effective result to obtain quality with training set of the complex sample (page 389-390)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify US Patent 6,675,104 to have the interrogating the classification model to identify one or more features that differentiate the different

biological status of each class from the biological status of other classes in the class set (page 390-392), wherein the one or more features include signal areas, signal widths, and the number of signals in each mass spectrum (page 392-393), in order to have a system able to solve problems with a rapid and effective result to obtain quality with training set of the complex sample.

Since the analysis employed in an obviousness-type double patenting determination parallels the guidelines for a 35 U.S.C. 103(a) rejection, the factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are employed when making an obvious-type double patenting analysis. These factual inquiries are summarized as follows:

(A) Determine the scope and content of a patent claim relative to a claim in the application at issue;

(B) Determine the differences between the scope and content of the patent claim as determined in (A) and the claim in the application at issue;

(C) Determine the level of ordinary skill in the pertinent art; and

(D) Evaluate any objective indicia of nonobviousness.

The conclusion of obviousness-type double patenting is made in light of these factual determinations.

Any obviousness-type double patenting rejection should make clear:

(A) The differences between the inventions defined by the conflicting claims — a claim in the patent compared to a claim in the application; and

(B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue >is anticipated by, or< would have been an obvious variation of >,< the invention defined in a claim in the patent.

When considering whether the invention defined in a claim of an application would have been an obvious variation of the invention defined in the claim of a patent, the disclosure of the patent may not be used as prior art. General Foods Corp. v. Studiengesellschaft Kohle mbH, 972 F.2d 1272, 1279, 23 USPQ2d 1839, 1846 (Fed. Cir. 1992). This does not mean that one is precluded from all use of the patent disclosure. (MPEP 804.II. 1)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a. Claims 1-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitt et al. (U.S. Patent application Publication 2003/0004402) in view of B.K. Alsberg (Classification of Pyrolysis mass spectra by fuzzy multivariate rule

induction-comparison with regression, K-nearest neighbour, neural and decision-tree methods, 1997 Elsevier Science B.V.)

Regarding claim 1:

Hitt describes a method that analyzes mass spectra (page 3, section 0019) using a digital computer (page 3, section 0023), the method comprising: a) entering into a digital computer a data set obtained from mass spectra from a plurality of samples (page 2, section 0016), wherein each sample is, or is to be assigned to a class within a class set comprising two or more classes (page 3, section 0021), each class characterized by a different biological status (page 2, section 0021), and wherein each mass spectrum comprises data representing signal strength as a function of time-of-flight (page 4, section 0032), mass-to-charge ratio, or a value derived from time-of-flight or mass-to-charge ratio using laser ionization desorption process (page 4, section 0032); and b) forming a classification model which discriminates between the classes in the class set (page 4, section 0032), wherein forming comprises analyzing the data set by executing code that embodies a classification process comprising a recursive partitioning process (page 4, section 0032).

Hitt does not describe interrogating the classification model to identify one or more features that differentiate the different biological status of each class from the biological status of other classes in the class set, wherein the one or more features include signal areas, signal widths, and the number of signals in each

mass spectrum. B.K. Alsberg describes interrogating the classification model to identify one or more features that differentiate the different biological status of each class from the biological status of other classes in the class set (page 390-392), wherein the one or more features include signal areas, signal widths, and the number of signals in each mass spectrum (page 392-393) in order to have a system able to solve problems with a rapid and effective result to obtain quality with training set of the complex sample (page 389-390)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hitt to have the interrogating the classification model to identify one or more features that differentiate the different biological status of each class from the biological status of other classes in the class set, wherein the one or more features include signal areas, signal widths, and the number of signals in each mass spectrum taught by B.K. Alsberg in order to have a system able to solve problems with a rapid and effective result to obtain quality with training set of the complex sample

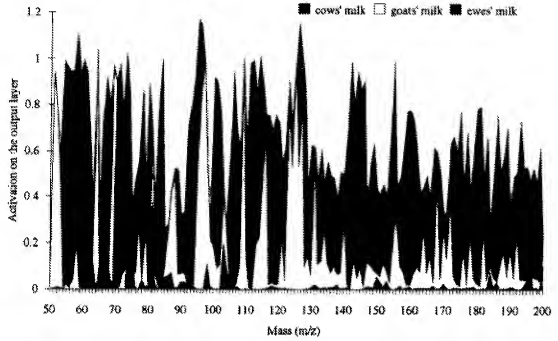

Fig. 8. Results of the estimates of trained 150-8-3 ANNs for the identity matrix. Three ANNs were interrogated after the RMS error was 0.001, this took between 400–800 epochs. The results shown are the averages of the three ANNs

Regarding claim 35:

Hitt describes a computer readable medium (page 3, section 0023) a) code for entering data set obtained from mass spectra (page 3, section 0019) from a plurality of samples (page 2, section 0016), wherein each sample is, or is to be assigned to a class within a class set comprising two or more classes (page 3, section 0021), each class characterized by a different biological status (page 3, section 0021), and wherein each mass spectrum comprises data representing signal strength as a function of time-of-flight (page 4, section 0032), mass-to-charge ratio, or a value derived from time-of-flight or mass-to-charge ratio using laser ionization desorption process (page 4, section 0032); and b) forming a classification model which discriminates between the classes in the

class set (page 4, section 0032), wherein forming comprises analyzing the data set by executing code that embodies a classification process comprising a recursive partitioning process (page 4, section 0032).

Hitt does not describe code for interrogating the classification model to identify one or more features that differentiate the different biological status of each class from the biological status of other classes in the class set, wherein the one or more features include signal areas, signal widths, and the number of signals in each mass spectrum. B.K. Alsberg describes code for interrogating the classification model to identify one or more features that differentiate the different biological status of each class from the biological status of other classes in the class set (page 390-392), wherein the one or more features include, signal areas, signal widths, and the number of signals in each mass spectrum (page 392-393) in order to have a system able to solve problems with a rapid and effective result to obtain quality with training set of the complex sample (page 389-390)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hitt to have the code for interrogating the classification model to identify one or more features that differentiate the different biological status of each class from the biological status of other classes in the class set, wherein the one or more features include signal areas, signal widths, and the number of signals in each mass spectrum taught by B.K. Alsberg in order

to have a system able to solve problems with a rapid and effective result to obtain quality with training set of the complex sample

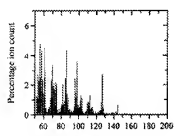

Fig. 1. Pyrolysis mass spectrum of pure cows' milk.

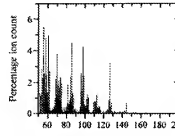

Fig. 2. Pyrolysis mass spectrum of pure goats' milk.

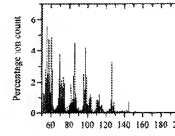

Fig. 3. Pyrolysis mass spectrum of pure ewes' milk

Regarding claim 2, Hitt further describes the mass spectra are selected from the group consisting of MALDI spectra (page 4, section 0032), surface enhanced laser desorption/ionization spectra, and electrospray ionization spectra.

Regarding claim 3, Hitt further describes the class set consists of exactly two classes (page 1, section 0003)

Regarding claim 4, Hitt further describes samples comprise biomolecules selected from the group consisting of polypeptides and nucleic acids (page 3, section 0019).

Regarding claim 5, Hitt further describes the samples are derived from a eukaryote, a prokaryote or a virus (abstract).

Regarding claim 6, Hitt further describes a normal status (page 1, section 0007)and a pathological status (abstract).

Regarding claim 7, Hitt further describes un-diseased (page 1, section 0007), low grade cancer and high grade cancer (page, 1, section 0005).

Regarding claim 8, Hitt further describes comprise a drug-responder state and a drug-non-responder state (page 8, section 00077, medical condition of any state).

Regarding claim 9, Hitt further describes comprise a drug-responder state and a drug-non-responder state (page 8, section 00077, medical condition of any state).

.**Regarding claim 10,** Hitt further describes comprise a toxic state and a non-toxic state (page 8, section 00077, medical condition of any state).

Regarding claim 11, Hitt further describes exposure to drug (page 9, section 0082).

Regarding claim 12, Hitt further describes the data set is a known data set (page 1, section 0008), and each sample is assigned to one of the classes before the data set is entered into the digital computer (page 3, section 0017).

Regarding claim 13, Hitt further describes forming the classification model comprises using pre-existing marker data to form the classification model (page 3, section 0024).

Regarding claim 14, Hitt further describes data representing signal strength as a function of mass-to-charge ratio (page 1, section 0006); clustering the signals having similar mass-to-charge ratios into signal clusters (page 1, section 0006); selecting signal clusters having at least a predetermined number of signals with signal intensities above a predetermined value (page 1, section 0006); identifying the mass-to-charge ratios corresponding to the selected signal clusters (page 1,

section 0006); and forming the data set using signal intensities at the identified mass-to-charge ratios (page 1, section 0006).

Regarding claim 15, Hitt further describes at least one of identifying features that discriminate between the different biological statuses, and learning (page 3, section 0018).

Regarding claims 16, 36, Hitt further describes neural network analysis (page 4, section 0026).

Regarding claim 17, Hitt further describes interrogating the classification model to determine if one or more features discriminate between the different biological statuses (page 6, section 0059).

Regarding claim 18, Hitt further describes repeating and using a larger plurality of samples (page 7,section 0062).

Regarding claim 19, Hitt further describes cluster analysis (page 7, section 0064).

Regarding claim 20, Hitt further describes forming the data set, wherein forming the data set comprises obtaining raw data from the mass spectra (page 7, section 60) and then preprocessing the raw mass spectra data to form the data set (page 7, section 60).

Regarding claim 21, Hitt further describes the different classes are selected from exposure to a drug, exposure to one of a class of drugs and lack of exposure to a drug or one of a class of drugs (page 1, section 0005).

Regarding claim 21, Hitt further describes value derive from mass-charge-ratio (page 2, section 0016).

Regarding claim 22, Hitt further describes representing signal strength as a function mass-to-charge ratio or a value derived from mass-to-charge ratio (page 2, section 0016).

Regarding claims 23, 28, Hitt further describes entering data obtained from a mass spectrum of the unknown sample into a digital computer; and processing the mass spectrum data using the classification model formed by the method (page 2, section 0015).

Regarding claim 24, Hitt further describes comprise un-diseased, low grade cancer and high grade cancer (page, 1, section 0005).

Regarding claim 25, Hitt further describes to a drug of one of a class of drugs (page 8, section 00077, medical condition of any state).

Regarding claim 26, Hitt further describes response to a drug (page 8, section 00077, medical condition of any state).

Regarding claim 27, Hitt further describes toxicity status (page 8, section 00077, medical condition of any state).

Regarding claims 29, 32, Hitt further describes code for entering data obtained from a mass spectrum of an unknown sample into a digital computer; and code for processing the mass spectrum data using the classification model formed by the method to classify the unknown sample in a class characterized by a biological status (page 2, section 0015).

Regarding claims 30, 33, 37, Hitt further describes a gas phase ion spectrometer (page 1, section 0003); a digital computer adapted to process data from the gas phase ion spectrometer; and the computer readable medium in operative association with the digital computer (page 3, section 0023).

Regarding claims 31, 34, 38, Hitt further describes adapted to perform a laser desorption ionization process (page 4, section 0032).

Regarding claims 39, Hitt further describes material is antibodies (page 6, section 0059).

Regarding claims 40, Hitt further describes entering data obtained from a mass spectrum of the unknown sample into a digital computer (page 3, section 0023), wherein the mass spectrum is derived from a surface enhanced laser desorption/ionization process (page 4, section 0032) using a substrate comprising an affinity material, wherein the affinity material comprises antibodies (page 6, section 0059); and processing the mass spectrum data using the classification model formed by the method to classify the unknown sample in a class characterized by a biological status (page 3, section 0021).

35 U.S.C. 103 authorizes a rejection where, to meet the claim, it is necessary to modify a single reference or to combine it with one or more other references. After indicating that the rejection is under 35 U.S.C. 103 (in light of KSR v. Teleflex, See MPEP 706.02(j)), the examiner should set forth in the Office action:

1. the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,

2. the difference or differences in the claim over the applied reference(s),

3. the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and

4. an explanation >as to< why >the claimed invention would have been obvious to< one of ordinary skill in the art at the time the invention was made.

Response to Arguments

4. Applicant's arguments with respect to the amended claims filed on 05/20/2008 have been fully considered but they are not persuasive.

A. Applicant argue in reference to double patenting, claim 1 is amended to recite c) interrogating the classification model to identify one or more features that differentiate the different biological status of each class from the biological status of other classes in the class set, wherein the one or more features include signal areas, signal widths, and the number of signals in each mass spectrum. Independent claim 35 is amended in a similar manner. This feature is not taught or suggested by the claims in Paulse et al., and the pending claims are therefore patentably distinct over the claims in Paulse et al. (remarks [age 9, section I)

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

B. Applicant argue in reference to 103 rejection, the one or more features include signal areas, signal widths, and the number of signals in each mass spectrum Clearly, differentiating spectra using the combination of these features is not taught or suggested by Alsberg (Remarks page 9, section II).

B.K. Alsberg describes the one or more features include signal areas, signal widths, and the number of signals in each mass spectrum in page 392-393.

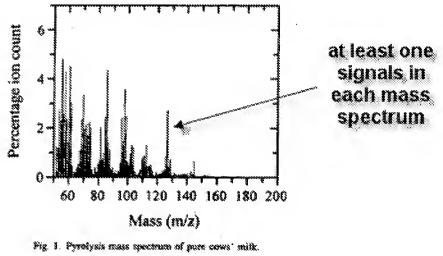

Fig. 1. Pyrolysis mass spectrum of pure cows' milk.

Conclusion

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, THIS ACTION IS MADE FINAL even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See

MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung S. Lau whose telephone number is 571-272-2274. The examiner can normally be reached on M-F 9-5:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone numbers for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tung S. Lau/
Tung S. Lau, Art Unit 2863
Primary Examiner
June 11, 2008